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COMPLEX PARTIAL EPILEPTIC-LIKE SIGNS CONTRIBUTE DIFFERENTIAL SOURCES OF VARIANCE TO LOW SELF-ESTEEM AND IMAGININGS [1]

M. A. PERSINGER

Laurentian University

Summary.—64 university men and 55 university women displayed correlations ($r = 0.40$) between two psychometric inventories that have been employed to study subclinical complex partial epileptic-like signs in normal and traumatically brain-injured people. Although psychometric inferences of self-esteem and reports of childhood memories and imaginings were not significantly associated, both indicators of complex partial epileptic-like signs showed significantly positive associations with fantasy-prone behavior but significantly negative correlations with self-esteem. Subsequent analyses supported the vectorial hemisphericity model that elevated mesiobasal limbic activity may enhance imaginings while frequent intrusions into awareness of right-hemispheric indicators would be also associated with lower self-esteem. Lower self-esteem was correlated significantly with reported fears and phobias for the women but not for the men.

Researchers from both the Laurentian University Neuroscience Group (Persinger & Makarec, 1992) and the Neuropsychology Group of the Iowa Veterans Administration Medical Center (Roberts, Varney, Hulbert, Paulsen, Richardson, Springer, Shepherd, Swan, Legrand, Harvey, Struchen, & Hines, 1990) have indicated that a continuum or spectrum of complex partial epileptic-like signs and symptoms integrates normal and abnormal populations. The existence of this lability is primarily manifested within the person's subjective experiences and objectively inferred by sensitive, quantitative measurements such as dichotic word listening errors (e.g., Springer, Garvey, Varney, & Roberts, 1991) rather than by gross clinical indicators or neurological examinations. Because both groups have developed different psychometric indicators, the first purpose of this experiment was to examine the shared variance between the two clusters of items. The second purpose was to evaluate the hypothesis that the inverse relationship between self-esteem and right hemisphericity (Persinger & Makarec, 1991a) is associated with a (cerebral cortical) source of complex partial epileptic-like signs that is different from a (subcortical) source associated with fantasy-prone behavior (Persinger, 1993).

To answer these questions a total population of 64 men and 55 women who were enrolled in an introductory psychology (total) class served as sub-

[1]Please send reprint requests to Dr. M. A. Persinger, Behavioral Neuroscience Laboratory, Department of Psychology, Laurentian University, Ramsey Lake Road, Sudbury, Ontario, Canada P3E 2C6.

jects. Their ages ranged between 20 and 26 years. Within a single setting they were administered the Personal Philosophy Inventory (Persinger & Makarec, 1993), the Roberts Checklist of Symptoms of Partial Seizures (Roberts, *et al.*, 1990) which was titled "Roberts CPES Inventory of Common Experiences" to minimize attribution bias, the Coopersmith Self-esteem Inventory (1981), and the Inventory of Childhood Memories and Imaginings (Wilson & Barber, 1983). The latter two inventories were selected because of their construct validity (Makarec & Persinger, 1987) or to enhance the continuity with our previous research.

For analyses, the complex partial epileptic-like signs cluster, the control cluster, and the left-hemispheric and right-hemispheric clusters (all scores were the percentage of yes or equivalent responses for each cluster of items) were extracted from the Personal Philosophy Inventory (Persinger & Makarec, 1993). The Total Symptom Score from the Roberts Checklist (7-point scale, 0 through 6), the score for the Inventory of Childhood Memories and Imaginings (sum of yes items divided by total number of items, multiplied by 100), and the general (primary) scale for the self-esteem questionnaire were calculated. All analyses involved SPSS software on a VAX 4000 computer. The two students who reported they had experienced an epileptic seizure (Question 113 of the Personal Philosophy Inventory) were excluded from the study.

The means and standard deviations (in parentheses) for the men and women, respectively, for the different clusters were on the Roberts Total Symptom Score 35 (22) and 37 (22) [for comparisons, Roberts, *et al.*, 1990; mean and *SD* based upon 228 normative (also university) subjects were 20.4 (14.1)]; complex partial epileptic-like signs 31% (19%) and 36% (18%), control cluster 75% (9%) and 79% (9%), left-hemisphere indicators 22% (16%) and 33% (17%), right-hemisphere indicators 41% (12%) and 46% (15%), Inventory of Childhood Memories and Imaginings 20% (7%) and 22% (7%), and General Self-esteem 39% (8%) and 34% (10%). Women displayed significantly (all *df*s = 1,117) lower self-esteem [$F = 6.33$, $p < .01$; $\eta = 0.21$] but more elevated scores for the control ($F = 6.61$, $p < .001$; $\eta = 0.21$) and left-hemisphere ($F = 11.82$, $p < .001$; $\eta = 0.24$) indicators. The direction and magnitude of the sex differences were commensurate with those of our previous studies.

For the men and the women, respectively, the Roberts Total Symptom Scores were significantly correlated; Pearson *r*s ($p < .05$) with complex partial epileptic-like signs from the Personal Philosophy Inventory were 0.38 and 0.44, for fantasy-prone characteristics 0.37 and 0.54, and for self-esteem −0.28 and −0.40. The complex partial epileptic-like cluster scores were correlated with the numbers of childhood memories and imaginings (0.59, 0.43); the women (−0.36) but not the men (−0.09) exhibited a significant

association between our (Persinger & Makarec, 1993) inference of complex partial epileptic-like signs and self-esteem. Scores for self-esteem and imaginings were not significantly correlated for either the men (0.00) or the women (−0.11). Partial correlation analyses with each of the three constructs, i.e., imaginings, complex partial epileptic-like signs, and self-esteem, held constant did not change the results of the zero-order correlations by more than 0.03.

The Roberts Total Symptom Score was significantly ($p < .01$) associated with the right-hemisphere cluster of items (r values for men and women, respectively, of 0.58 and 0.45) but not the left-hemisphere cluster of items (0.16, 0.02) from the Personal Philosophy Inventory. Factor analyses (principal components), after varimax rotation, supported the hypothesis that as the self-reported incidence of right-hemispheric indicators increased, self-esteem (which can be considered the affective rather than the cognitive component of this concept) decreased for both men and women. For the women (values in parentheses refer to the correlation coefficients for the factor loadings; $r > 0.40$ was accepted as statistically significant) right-hemisphere indicators (0.73), the Roberts Total Symptom Score (0.82), numbers of childhood memories and imaginings (0.63), and General Self-esteem (−0.75) were loaded significantly on one factor (eigenvalue = 2.33; 47% of the variance accounted for); left-hemisphere indicators (0.89) and the numbers of childhood memories and imaginings (0.53) were loaded on the second factor (eigenvalue = 1.18; 24% of variance explained). For the men right-hemisphere indicators (0.58), Roberts Total Symptom Scores (0.75), and general self-esteem scores (−0.83) were the only significant, i.e., $r > 0.30$, contributors to one factor (eigenvalue = 1.15, 23% of the variance explained); left-hemisphere indicators (0.73), right-hemisphere indicators (0.63), and Inventory of Childhood Memories and Imaginings (0.83) constituted another factor (eigenvalue = 2.27, 45.5% of variance explained).

These results support previous results and indicate that normal young adults who exhibit quantitatively more subjective experiences and phenomenological profiles which are similar to those reported by patients who exhibit complex partial epilepsy also exhibit lower self-esteem (Persinger & Makarec, 1991b) and engage in more fantasy-prone behavior (Makarec & Persinger, 1987). However, the latter two constructs, as inferred by these measures, are not themselves significantly associated.

A common clinical assumption is that epileptic patients exhibit low self-esteem or depression because of the social and personal consequences of their epilepsy (Beran & Flanagan, 1987; Robertson, Trimble, & Townsend, 1987). The correlation between complex partial epileptic-like experiences and lowered self-esteem in normal subjects indicates the association is *not* specific to patients and may reflect a more general "third-factor" process

(Persinger, 1994) which contributes to both frank epilepsy and a modified self-concept. We have postulated (Persinger & Makarec, 1991a) that frequent intrusions from the affective and primarily nonverbal right-hemispheric processes strongly influence the emotional component (self-esteem) of the self-concept.

Although idiosyncratic alteration in interhemispheric microstructure could promote these experiences within particular subpopulations, genetic or pervasive congenital determinants could affect their proportions in very large subsets of the human population. In this context, the statistically significant lower self-esteem of normal women compared to men (comparable to an η value of 0.21) would be a function of the more frequent intrusions of right-hemispheric characteristics, e.g., anxious vigilance, into the left-hemispheric sense of self (Persinger, 1993) given the greater interhemispheric coherence (less lateralization) of the normal right-handed female (temporoparietal) brain. The greater hemispheric lateralization of the normal right-handed male brain would encourage more functional partitioning of the left (linguistic) hemispheric sense of self from right-hemispheric function. The existence of this sexually dimorphic neurocognitive organization could explain the higher incidence of fears and phobias ($\eta = .30$) for normal women than for normal men but their greater endorsement of indicators of egocentricity ($\eta = .25$) compared with that for women (Persinger & Makarec, 1990).

To verify the validity of the asymmetric relationship between right/left hemispheric ratios which contribute to histories of apprehensiveness (which would contribute to phobias and fears), egocentric emphasis and self-esteem, the fear (phobia) and egocentrism clusters (Persinger & Makarec, 1991b) were extracted for these subjects. Commensurate with previous research, women exhibited significantly ($F_{1,128} = 37.34$, $p < .001$; $\eta = 0.48$) higher scores on the fear cluster [59% and (22%)] relative to the men [36% and (20%)] while the men exhibited higher ($F = 17.54$, $p < .001$; $\eta = 0.35$) scores on the egocentrism cluster [51% and (17%)] than did the women [39% and (14%)]. Whereas the correlation between egocentrism and self-esteem was significant ($p < .05$) and positive for both men ($r = 0.22$) and women (0.23), the fear scores were associated with self-esteem for the women (-0.38, $p < .001$) but not for the men (-0.03, $p > .05$). These results are also compatible with the greater contribution of right-hemispheric properties (apprehension) to the lower self-esteem of normal women given the enhanced interhemispheric coherence (Persinger, 1993).

REFERENCES

BERAN, R. G., & FLANAGAN, P. J. Psychosocial sequelae of epilepsy: the role of associated cerebral pathology. *Epilepsia*, 1987, 28, 107-110.

COOPERSMITH, S. *Self-esteem inventories*. Palo Alto, CA: Consulting Psychologists Press, 1981.

MAKAREC, K., & PERSINGER, M. A. Electroencephalographic correlates of temporal lobe signs and imaginings. *Perceptual and Motor Skills*, 1987, 64, 1124-1126.

PERSINGER, M. A. Vectorial cerebral hemisphericity as differential sources for the sensed presence, mystical experiences and religious conversions. *Perceptual and Motor Skills*, 1993, 76, 915-930.

PERSINGER, M. A. Seizure suggestibility may not be an exclusive differential indicator between psychogenic and partial complex seizures: the presence of a third factor. *Seizure*, 1994, 3, 215-219.

PERSINGER, M. A., & MAKAREC, K. University females are more fearful and males are more egotistic: possible implications for vocational pursuits and response to crisis. *Perceptual and Motor Skills*, 1990, 70, 1297-1298.

PERSINGER, M. A., & MAKAREC, K. Greater right hemisphericity is associated with lower self-esteem in adults. *Perceptual and Motor Skills*, 1991, 73, 1244-1246. (a)

PERSINGER, M. A., & MAKAREC, K. Psychometric differentiation of men and women by the Personal Philosophy Inventory. *Personality and Individual Differences*, 1991, 12, 1267-1271. (b)

PERSINGER, M. A., & MAKAREC, K. The feeling of a presence and verbal meaningfulness in context of temporal lobe function: factor analytic verification of the Muses? *Brain and Cognition*, 1992, 20, 217-226.

PERSINGER, M. A., & MAKAREC, K. Temporal lobe epileptic signs as a continuum from normals to complex partial epileptics: normative data and special populations. *Journal of Clinical Psychology*, 1993, 40, 33-45.

ROBERTS, R. J., VARNEY, N. R., HULBERT, J. R., PAULSEN, J. S., RICHARDSON, E. D., SPRINGER, J. A., SHEPHERD, J. S., SWAN, C. M., LEGRAND, J. A., HARVEY, J. H., STRUCHEN, M. A., & HINES, M. E. The neuropathology of everyday life the frequency of partial seizure symptoms among normals. *Neuropsychology*, 1990, 4, 65-85

ROBERTSON, M. M., TRIMBLE, M. R., & TOWNSEND, H R. A. Phenomenology of depression in epilepsy. *Epilepsia*, 1987, 28, 364-372.

SPRINGER, J., GARVEY, M., VARNEY, M., & ROBERTS, R. Dichotic listening failure in dysphoric neuropsychiatric patients who endorse multiple seizure-like symptoms. *Journal of Nervous and Mental Disease*, 1991, 179, 459-467.

WILSON, S. C., & BARBER, T. X. The fantasy prone personality: implications for understanding imagery, hypnosis and parapsychological phenomena. In A. A. Sheikh (Ed.), *Current theory, research and application*. New York: Wiley, 1983. Pp. 340-387.

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